

Application Serial No. 10/585,477
Reply to Office Action of October 18, 2010

PATENT
Docket: CU-4938

REMARKS

In the Office Action, dated October 18, 2010, the Examiner states that Claims 1-10 and 12 are pending and rejected. By the present Amendment, Applicant amends the claims.

Rejections under 35 U.S.C. §112

Claims 1-10 and 12 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Office Action finds the phrase "a wire material used to form a coil expander" recited in Claim 1 unclear as to whether Claim 1 is claiming the method limitations and/or a wire material with a particular shape. Applicant has amended Claim 1 to clarify that it is directed to the wire material with a particular shape.

Further, in response to the assertion that the phrase "a cross-sectional shape of the coil expander formed by using the wire material is a rectangular shape with four flat surfaces, a cross-sectional shape of the wire material is a rectangular shape with a convex curved surface at the longer side of the rectangular cross section" recited in Claim 1 is unclear, Applicant has incorporated the features of Claims 3 and 4 into Claim 1. Claim 1 now specifies that the cross-sectional shape of the wire material is "a rectangular shape comprising two flat surfaces at the shorter sides, a convex curved surface at one longer side and a concave curved surface at another longer side."

As such, Applicant respectfully requests withdrawal of the present rejections under 35 U.S.C. §112, second paragraph.

Drawings

The drawings are objected to because the Office Action does not consider that they depict each and every feature recited in Claims 11 and 12. Specifically, the Office Action does not consider that they show a rectangular cross-sectional shape and an outer peripheral surface thereof as being flat. Applicant indicates that Claim 11 was cancelled in a previous amendment and the foregoing feature noted in the Office Action is not recited in Claim 12. Withdrawal of the present objection is respectfully requested.

Rejections under 35 U.S.C. §102(b) and 103(a)

Claims 11-12 are rejected under 35 U.S.C. §102(b) as being anticipated by Hoshi (JP-60-101247). Claims 1-8 and 10 are rejected under 35 U.S.C. §102(b) as

Application Serial No. 10/585,477
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Docket: CU-4938

being anticipated by Goldstein (US 5,542,682). Claims 1, 3, 5-8, 10 and 11 are rejected under 35 U.S.C. §102(b) as being anticipated by Bush (US 3,893,660). Claims 2-3 and 5-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Goldstein. Claims 2 and 4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bush. Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Masuyama (US 6,860,485). Claims 1-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Masuyama in view of Goldstein. Claims 11-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Mercier (US 4,114,905) in view of Masuyama. Applicant respectfully disagrees with and traverses these rejections.

As previously noted, Applicant has incorporated the features of Claims 3 and 4 into Claim 1.

By this amendment, Claim 1 now recites a wire material which has the cross-sectional shape of "the rectangular shape comprising the two flat surfaces at the shorter sides, the convex curved surface at one longer side and the concave curved surface at another longer side" as illustrated in FIG. 1 of the present application. In general, when a wire material having a rectangular cross-sectional shape is bent into a coil shape, to the portion of the wire material constituting the inner peripheral surface of the coil expander, a force is applied in a compressing direction. Thereby, the inner peripheral surface of the coil expander is deformed into the convex shape. Since such coil expander tends to contact to a core material inserted therein only on one side thereof, there is a high possibility of occurrence of wear, breakage, and the like, on the inner peripheral surface. However, in Claim 1, the surface of the wire material for a coil expander, which constitutes the inner peripheral surface of the coil expander, is formed into the concave curved shape. Thereby, the deformation of the inner peripheral surface into the convex shape, when the wire material is formed into a coil expander, is prevented, and wear and breakage of the inner peripheral surface can be reduced (page 6, line 21 to page 7, line 14 of the English specification).

Further, Claim 1 has the following feature of cancelled Claim 4, in addition to the features of the cancelled Claim 3, "when the height, in the surface of the wire material, of the convex curved surface is "a" and the height, in the surface of the wire material, of the concave curved surface is "b", $a \geq b + 0.005 \text{ mm}$." Thereby, the shapes of the outer and inner periphery side surfaces thereof can be made flatter

Application Serial No. 10/585,477
Reply to Office Action of October 18, 2010

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Docket: CU-4938

when the coil expander is formed using the wire material of the present invention. Accordingly, the coil expander executes surface sliding against, for example, the inner peripheral groove of the oil ring, the core material, etc. so that the amount of wear of the coil expander can be reduced in its entirety (page 7, line 15 to page 8, line 1 of the English specification).

In contrast thereto, the cited references are completely silent about a surface constituting an inner peripheral surface of a coil being a concave curved surface. Therefore, Applicant respectfully asserts that none of these can properly be cited as anticipating the claims.

For example, the shape of "50b" illustrated in FIG. 6 of Goldstein is a rectangular shape where both of the longer sides facing each other are flat surfaces and both of the shorter sides facing each other are convex curved surfaces. When a wire material having such rectangular shape is bent into a coil shape, the outer peripheral surface of the coil will be a concave shape and the inner peripheral surface of the coil will be a convex shape because of the stress applied at the time of bending and therefore, various problems may be caused.

Moreover, FIG. 4 of Bush illustrates the rectangular shape whose one surface is a convex curved surface. However, when a wire material having such a cross-sectional shape is bent into a coil shape so as the convex curved surface of the wire material becomes an outer surface, the outer-side surface of the coil becomes a shape close to a flat surface, but the inner-side surface of the coil becomes a convex curved surface due to the stress applied at the time of bending. Thus, the above-mentioned problems may be caused.

Since the problem of "deformation in the inner peripheral surface of the wire material caused at the time of bending the wire material into a coil shape" is not acknowledged in the cited references, none of the references teach or suggests the means to solve the problem, that is "to form the surface of the wire material into a concave curved surface, when a coil expander is formed using the wire materials whose surface becomes the inner peripheral surface of the coil expander".

In addition, since none of the references disclose the "concave curved shape," they do not teach or suggest the relationship of the convex curved shape and the concave curved shape: "when the height, in the surface of the wire material, of the convex curved surface is "a" and the height, in the surface of the wire material, of the

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concave curved surface is "b", $a \geq b + 0.005 \text{ mm.}$ "

To support a *prima facie* case of obviousness, the Office Action must establish "a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference." Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of *KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg. 57,526 (Oct. 10, 2007). Since the prior art does not teach or suggest each and every feature of the presently claimed invention, Applicant respectfully asserts that a *prima facie* case of obviousness cannot presently be established.

Since independent Claim 1 is allowable over the prior art, Applicant asserts that all claims depending therefrom are allowable for at least the same reasons, as well as for the features that they recite. As such, Applicant respectfully requests withdrawal of the present rejections under 35 U.S.C. § 102(b) and 103(a).

In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

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Date

Respectfully submitted,



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